

Claims

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1. A process for primer coating of steel which is intended to be fabricated and overcoated, in which process the steel is primer coated with a primer coating comprising a silica or silicate binder, characterized in that the binder comprises an aqueous silica sol or alkali metal silicate having a  $\text{SiO}_2/\text{M}_2\text{O}$  mole ratio, where M represents total alkali metal and ammonium ions, of at least 6:1, and that after the primer coating has dried to the extent that it is touch dry it is treated with a film strengthening solution.
  2. A process according to claim 1, characterized in that the touch dry primer coating is sprayed with the film strengthening solution.
  3. A process according to claim 1 or claim 2, characterized in that the binder is a silica sol of  $\text{SiO}_2/\text{M}_2\text{O}$  mole ratio at least 25:1.
  4. A process according to claim 1 or claim 2, characterized in that the binder comprises an aqueous solution of an alkali metal or ammonium silicate stabilized by a silicate substituted by at least one anionic group of lower pKa than silicic acid, having a pH of 7 to 10.5 prepared by lowering the pH of a solution of silicate and silicate by ion exchange.
  5. A process according to any of claims 1 to 4, characterized in that the primer coating further comprises zinc powder and/or a zinc alloy.
  6. A process according to any of claims 1 to 5, characterized in that the primer coating further comprises an organic resin.
  7. A process according to any of claims 1 to 6, characterized in that all components of the coating composition are added and thoroughly mixed shortly before application.

8. A process according to any of claims 1 to 7, characterized in that the touch dry primer coating is treated with a solution of a silicate or alkoxysilane.
- 5 9. A process according to any of claims 1 to 8, characterized in that the solution is applied to the touch dry primer coated steel at 0.005-0.2 liters per square meter primer coated surface.
- 10 10. A process according to any of claims 1 to 9, characterized in that the touch dry primer coating is treated with an aqueous solution of an inorganic salt of concentration at least 0.01M.
- 15 11. A process according to any of claims 1 to 10, characterized in that the primer coating of the steel, drying of the primer coating until it is touch dry and application of the treatment solution are carried out successively in an on-line process.
- 20 12. A process according to any of claims 1 to 11, characterized in that the primer coating is dried at a temperature of 10 - 60°C in a forced air flow.
- 25 13. Use of an aqueous solution of an inorganic salt of concentration at least 0.01M as a spray treatment of steel primer coated with a primer coating comprising an aqueous silica sol or alkali metal silicate binder having a  $\text{SiO}_2/\text{M}_2\text{O}$  mole ratio, where M represents total alkali metal and ammonium ions, of at least 6:1.
- 30 14. Use of a silicate or alkoxysilane solution as a spray treatment of steel primer coated with a primer coating comprising an aqueous silica sol or alkali metal silicate binder having a  $\text{SiO}_2/\text{M}_2\text{O}$  mole ratio, where M represents total alkali metal and ammonium ions, of at least 6:1.

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